

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

IN RE APPLICATION OF: Akiko SAITO, et al.

SERIAL NO: New Application

GAU:

FILED: Herewith

EXAMINER:

FOR: MAGNETIC COMPOSITE MATERIAL AND METHOD FOR PRODUCING THE SAME

**INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR 1.97**

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

SIR:

Applicant(s) wish to disclose the following information.

**REFERENCES**

- ☒ The applicant(s) wish to make of record the references listed on the attached form PTO-1449. Copies of the listed references are attached, where required, as are either statements of relevancy or any readily available English translations of pertinent portions of any non-English language references.
- ☐ A check or credit card payment form is attached in the amount required under 37 CFR §1.17(p).

**RELATED CASES**

- ☒ Attached is a list of applicant's pending application(s) or issued patent(s) which may be related to the present application. A copy of the patent(s), together with a copy of the claims and drawings of the pending application(s) is attached along with PTO 1449.
- ☐ A check or credit card payment form is attached in the amount required under 37 CFR §1.17(p).

**CERTIFICATION**

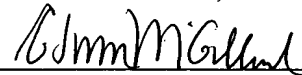
- ☐ Each item of information contained in this information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this statement.
- ☐ No item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application or, to the knowledge of the undersigned, having made reasonable inquiry, was known to any individual designated in 37 CFR §1.56(c) more than three months prior to the filing of this statement.

**DEPOSIT ACCOUNT**

- ☒ Please charge any additional fees for the papers being filed herewith and for which no check or credit card payment is enclosed herewith, or credit any overpayment to deposit account number 15-0030. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

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**LIST OF RELATED CASES**

<u>Docket Number</u>	<u>Serial or Patent Number</u>	<u>Filing or Issue Date</u>	<u>Inventor/ Applicant</u>
220954US-0 SRD	6,676,772	01/13/04	SAITO, et al.
236185US0 SRD	10/403,119	04/01/03	FUKAMICHI, et al.

DOCKET NO.: 250998US0SRD

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

IN RE APPLICATION OF: Akiko SAITO, et al.

SERIAL NO: New Application

FILED: HEREWITH

FOR: MAGNETIC COMPOSITE MATERIAL AND METHOD FOR PRODUCING  
THE SAME

**STATEMENT OF RELEVANCY**

**Reference AB (US 5,743,095) on Form PTO-1449:**

This discloses active magnetic refrigerants  $Gd_5(Ge_{1-x}Si_x)_4$  and refrigeration apparatus using them.  $Gd_5(Ge_{1-x}Si_x)_4$ , where x is equal to or less than 0.5. All of them are different from the materials of the present invention in composition.

**Reference AU on Form PTO-1449:**

This reference relates to a magnetic material for room-temperature magnetic refrigeration,  $La(Fe_{0.98}Co_{0.02})_{11.7}Al_{1.3}$ , which has the  $NaZn_{13}$ -type structure. But there is no description of micro-structure of material. We found the relation between a strength of material and it's micro-structure size which consists of main-phase and sub-phase.

**Reference AV on Form PTO-1449:**

This reference relates to a magnetic material for room-temperature magnetic refrigeration,  $LaFe_{10.6}Si_{2.4}$ , which has the  $NaZn_{13}$ -type structure. But there is no description of micro-structure material.

**Reference AW on Form PTO-1449:**

This reference relates to a magnetic material for room-temperature magnetic refrigeration,  $La(Fe_xSi_{1-x})_{13}$ , which has the  $NaZn_{13}$ -type structure. But there is no description of micro-structure of material.

DOCKET NO.: 250998US0SRD

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

IN RE APPLICATION OF: Akiko SAITO, et al.

SERIAL NO: New Application

FILED: HERewith

FOR: MAGNETIC COMPOSITE MATERIAL AND METHOD FOR PRODUCING  
THE SAME

**STATEMENT OF RELEVANCY**

**Reference AX on Form PTO-1449:**

This reference relates to an active magnetic refrigerator with a solenoidal superconducting magnet applied on cooling near-room temperature using Gd spheres as a magnetic refrigerant. That differs from the materials of the present invention in composition.

**Reference AY on Form PTO-1449:**

This reference relates to a magnetic material for room-temperature magnetic refrigeration,  $\text{La}(\text{Fe}_{1-x}\text{Si}_{1-x})_{13}$ , which has the  $\text{NaZn}_{13}$ -type structure. But there is no description of micro-structure of the material.

Form PTO 1449 (Modified)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTY DOCKET NO. 250998US0SRD		SERIAL NO. New Application	
LIST OF REFERENCES CITED BY APPLICANT				APPLICANT Akiko SAITO, et al.			
				FILING DATE Herewith		GROUP	
<b>U.S. PATENT DOCUMENTS</b>							
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
	AA	6,676,772	01/13/2004	Akiko SAITO, et al.			
	AB	5,743,095	04/28/98	Karl A. GSCHNEIDNER, JR., et al.			
	AC						
	AD						
	AE						
	AF						
	AG						
	AH						
	AI						
	AJ						
	AK						
	AL						
	AM						
	AN						
<b>FOREIGN PATENT DOCUMENTS</b>							
		DOCUMENT NUMBER	DATE	COUNTRY	TRANSLATION YES                  NO		
	AO						
	AP						
	AQ						
	AR						
	AS						
	AT						
<b>OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, etc.)</b>							
	AU	Feng-xia HU, et al., "MAGNETIC ENTROPY CHANGE IN $\text{La}(\text{Fe}_{0.98}\text{Co}_{0.02})_{11.7}\text{Al}_{1.3}$ ", J. Phys.: Condens. Matter, Vol. 12, 2000, pgs. L691-L696					
	AV	X. X. ZHANG, et al., "MAGNETIC ENTROPY CHANGE IN Fe-BASED COMPOUND $\text{LaFe}_{10.6}\text{Si}_{2.4}$ ", Applied Physics Letters, Vol. 77, No. 19, November 6, 2000, pgs. 3072-3074					
	AW	S. FUJIEDA, et al., "LARGE MAGNETOCALORIC EFFECT IN $\text{La}(\text{Fe}_x\text{Si}_{1-x})_{13}$ ITINERANT-ELECTRON METAMAGNETIC COMPOUNDS", Applied Physics Letters, Vol. 81, No. 7, August 12, 2002, pgs. 1276-1278					
	AX	C. ZIMM, et al., "DESCRIPTION AND PERFORMANCE OF A NEAR-ROOM TEMPERATURE MAGNETIC REFRIGERATOR", Advances in Cryogenic Engineering, Vol. 43, 1998, pgs. 1759-1766					
	AY	A. FUJITA, et al., "GIANT MAGNETOVOLUME AND MAGNETOCALORIC EFFECTS IN ITINERANT-ELECTRON METAMAGNETIC $\text{La}(\text{Fe}_x\text{Si}_{1-x})_{13}$ COMPOUNDS", Materia Japan, Vol. 41, No. 4, April 20, 2002, pgs. 269-275					
	AZ					<input type="checkbox"/> Additional References sheet(s) attached	
Examiner							
*Examiner: Initial if reference is considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.							